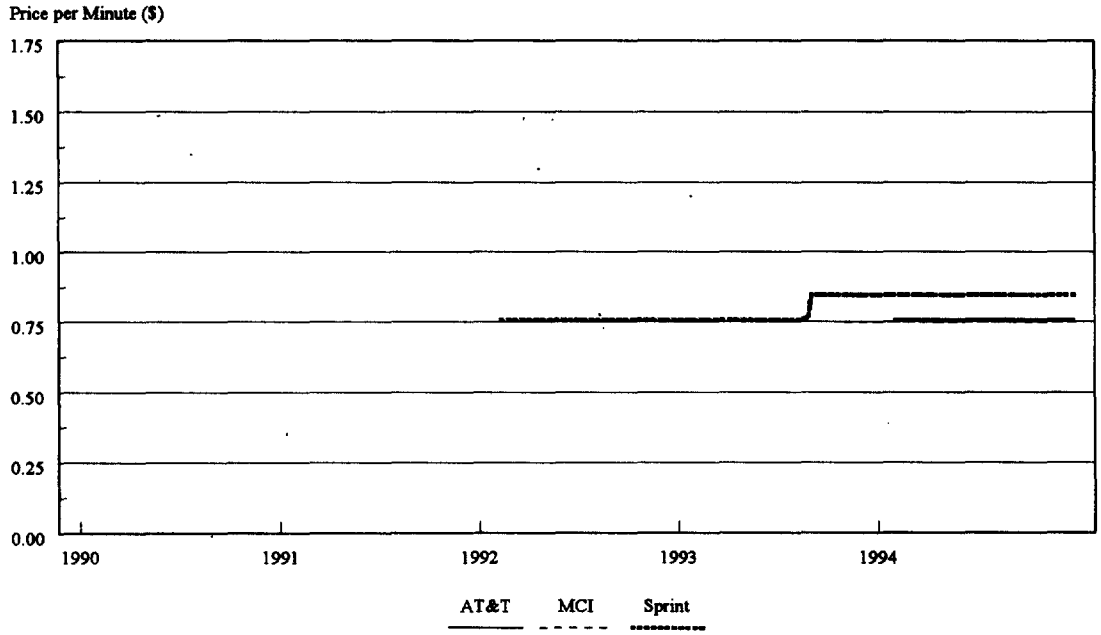
known as *Sprint World* that provides discounted international rates for calls during off-peak periods for a monthly fee of $3.00. *Sprint World* participants are charged full IMTS rates for calls placed during peak calling periods.

47. Discount IMTS prices generally followed the same patterns as standard IMTS prices, which is not surprising given that discount prices generally equal a fixed percentage of standard prices (see Figure Two). The percentage discounts offered by the carriers in their IMTS discount plans are shown in Table Seven for 1994. Discount IMTS prices ranged from 76 percent to 95 percent of standard IMTS prices. (Discount IMTS prices for all the countries are shown in Figures Nine to Sixteen of Appendix Three.) Notice that because discount IMTS prices follow the same pattern as standard IMTS prices, the resulting price-cost margins for both price series necessarily follow the same pattern since standard and discount IMTS services have the same marginal costs.

$500 of international calls per month. Usage in excess of $500 is billed at full international IMTS rates.

FIGURE TWO
DISCOUNT IMTS INDEX PRICES FOR LONG-DISTANCE CALLS FROM UNITED STATES TO UNITED KINGDOM (30% STANDARD, 50% DISCOUNT, AND 20% ECONOMY)



Prices based on 50 minutes per month.

TABLE SEVEN
DISCOUNT IMTS PRICES AS A PERCENTAGE OF
STANDARD IMTS PRICES
(1994)

Country	AT&T	MCI	Sprint
Canada	85%	82%	88%
Mexico	95%	93%	95%
United Kingdom	85%	84%	95%
Germany	90%	77%	77%
France	80%	79%	81%
Italy	80%	77%	78%
Japan	76%	76%	77%
Dominican Republic	88%	89%	n/a

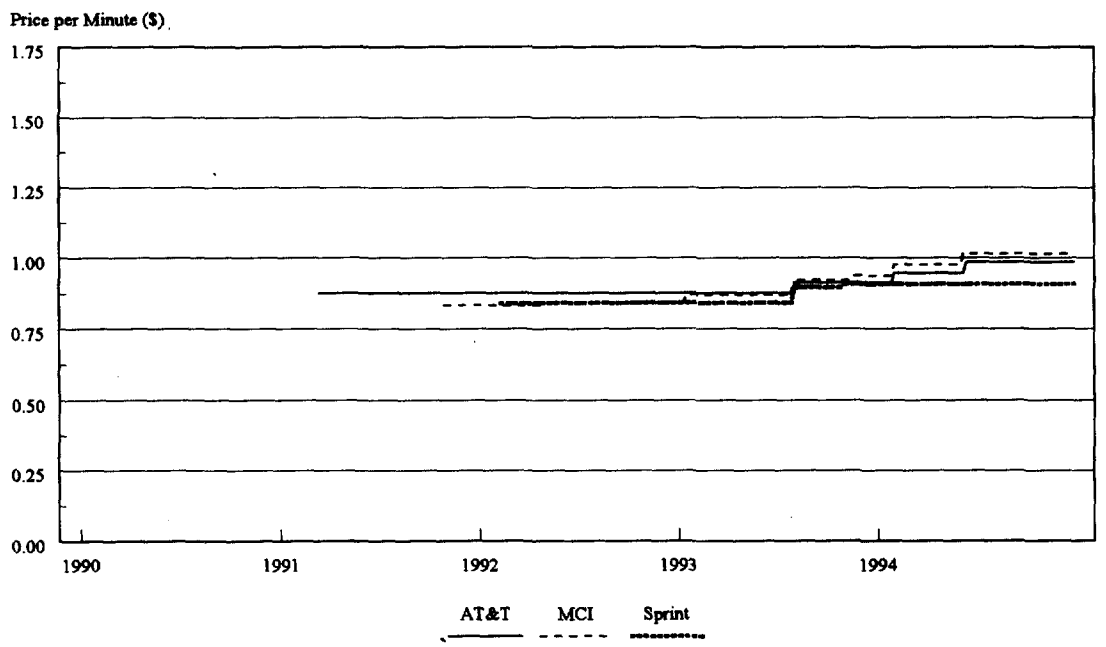
48. The discount IMTS rates show that carriers generally offer similar discounts for calls to the same country.[29] This suggests the carriers match discounts in specific country-pair markets. There is also evidence that carriers offer larger discounts for IMTS in country-pair markets in which their price-cost margins for discount and standard IMTS are larger. For example, as shown below, price-cost margins for discount and standard IMTS calls to Canada generally exceed those for Mexico and the Dominican Republic, and the discounts shown in Table Seven are larger for Canada than for Mexico and the Dominican Republic. This suggests carriers offer larger discounts off standard IMTS prices when margins on those services are higher, so that resulting margins earned on discount IMTS services are also relatively high. But carriers do not

[29] There are two exceptions. Sprint offers a smaller discount for calls to the United Kingdom than AT&T and MCI, and AT&T offers a smaller discount for calls to Germany than MCI and Sprint.

offer large discounts off standard IMTS prices in markets in which their price-cost margins for those services are relatively lower, although well above the competitive level.

49. Finally, with respect to IWATS prices, an example is shown in Figure Three for calls from the United States to the United Kingdom. The carriers' prices exhibit similar changes over the period 1991 to 1994, and show that IWATS prices increased more than standard and discount IMTS prices.[30] Outbound IWATS prices increased by $0.11 to $0.18 per minute during this period. This pattern of more rapid increases in IWATS prices compared to standard and discount IMTS prices is repeated for the other country pairs. (IWATS prices for all the countries are shown in Figures Seventeen to Twenty-Four of Appendix Three.)

FIGURE THREE
IWATS INDEX PRICES FOR
LONG-DISTANCE CALLS FROM UNITED STATES TO UNITED KINGDOM
(60% STANDARD, 20% DISCOUNT, AND 20% ECONOMY)



[30] Outbound IWATS prices for the United States to the United Kingdom exceed standard IMTS prices because of differing time-of-day assumptions. With the same time-day assumptions, IWATS prices are lower.

B. Calculation of Carriers' Marginal Costs

50. The next step in estimating carriers' price-cost margins is to determine their marginal costs. The marginal cost of an international call equals the change in a carrier's total costs caused by the call. Marginal costs for outbound United States international calls have three components: originating local access costs, network costs, and international settlement costs.

51. Originating access costs are charges paid to local exchange companies for transporting a call from a United States customer's location to the interexchange carrier's point of presence. For example, for a switched call from San Francisco to Tokyo, the United States carrier must pay an originating access charge to Pacific Bell for transporting the call from the customer's location to the carrier's point of presence. Over the 1990 to 1994 period, average originating switched access costs in the United States decreased about 12%, from approximately $0.0375 to $0.0330 per minute.

52. Network costs are the expenses the carrier incurs for transporting the call on its system from the point of presence in the United States to the foreign carrier's international gateway. For calls from the United States to the United Kingdom, for example, British Telephone's international gateway is the midpoint of the Atlantic Ocean. Network costs were assumed to remain constant over the 1990 to 1994 period at $0.02 per conversation minute (see Appendix Five for details).

53. International settlement costs are the costs the United States carrier pays the foreign carrier for transporting the call from the theoretical international midpoint to the destination location. Settlement costs fell during the 1990 to 1994 period, for example, settlement costs for calls from to the United States to the United Kingdom fell from $0.53 to

$0.305 per minute.[31] In percentage terms, settlement costs fell as much as fifty percent in some countries.

54. In addition to paying settlement costs to foreign carriers for outbound calls, United States carriers also receive settlement payments from foreign carriers for calls terminating in the United States.[32] Under the international settlements process, a United States carrier's net settlement payments equal the difference between payments to foreign carriers and payments received from foreign carriers. Using the net settlement payments (per outbound minute) rather than (gross) settlement payments (per outbound minute) results in an estimate of carriers' marginal costs that takes into account inbound calls by considering the difference between payouts by United States carriers and receipts from foreign carriers according to established international settlement procedures. An increase in a carrier's outbound minutes to a particular foreign country, all else constant, increases its share of the outbound market. This has the effect of increasing settlement receipts from that foreign country since inbound traffic minutes are allocated according to those outbound market shares. In contrast, using gross settlement payments (per outbound minute) results in an estimate of carriers' marginal costs that assumes United States carriers receive no inbound calls. Thus, use of gross settlement payments results in an over-estimate of carriers' marginal costs because it assumes carriers receive no revenue from foreign carriers for completing inbound calls to the United States.

55. A comparison of carriers' marginal costs using net settlement payments versus gross settlement payment is shown in Figures Four and Five for calls from the United States to the United Kingdom. (Marginal costs based on both net settlement payments and gross settlement

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[31] These costs equal one half of the accounting rate, so that they represent the cost paid by a United States carrier to a foreign carrier for terminating a call originating in the United States. The foreign carrier also pays one half the accounting rate to United States carriers for calls originating in their countries. The one exception is Mexico, where U.S. carriers pay more to terminate a call in Mexico than the Mexican carrier pays to terminate a call in the United States.

[32] Technically, payments are based on where calls are billed rather than where they originate. See Appendix Four.

payments for the eight foreign country pairs are shown in Figures One to Sixteen of Appendix Five.) As can be observed, using net settlement payments results in lower and more variable settlement payments, which occurs because net settlement payments vary both over time and among carriers.[33] In contrast, using gross settlement payments results in higher marginal costs that fall in step-function manner, which are identical for all carriers. Because net settlement payments more accurately represent carriers' outbound and inbound international traffic flows, marginal costs based on net settlement rates are used to calculate price-cost margins in this affidavit. However, my conclusions regarding the competitiveness of outbound United States international markets would not change if marginal costs based on gross settlement payments were used is place of net settlement payments (see Appendix Five).

[33] FCC data on net settlement payments are available through 1993. I assume that 1994 marginal costs equal 1993 costs, which is conservative (in producing lower profit margins) given that marginal costs generally remained constant or declined over the period 1990 to 1993.

FIGURE FOUR
MARGINAL COST OF INTERNATIONAL TELECOMMUNICATIONS SERVICE FROM UNITED STATES TO UNITED KINGDOM (BASED ON NET SETTLEMENT PAYMENTS)

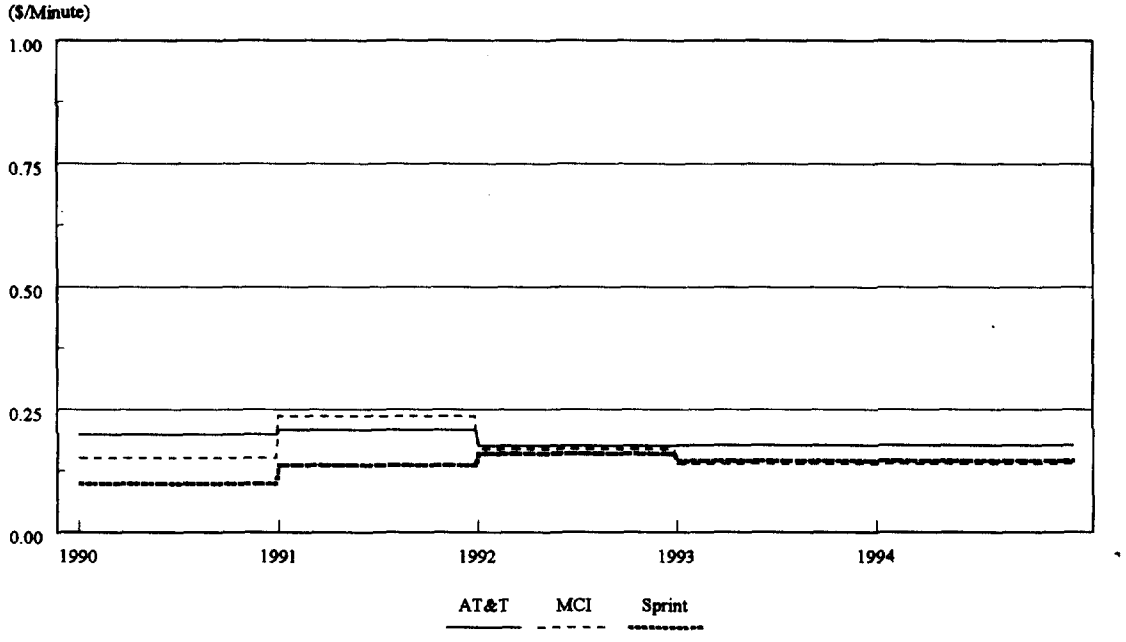
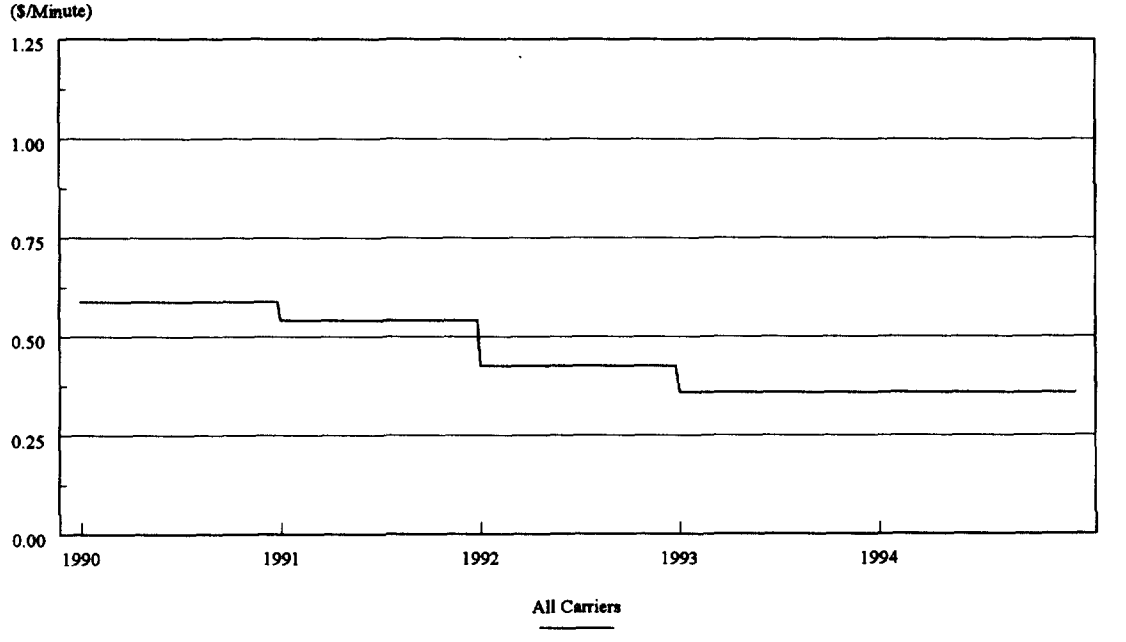


FIGURE FIVE
MARGINAL COST OF INTERNATIONAL TELECOMMUNICATIONS SERVICE FROM UNITED STATES TO UNITED KINGDOM (BASED ON GROSS SETTLEMENT PAYMENTS)

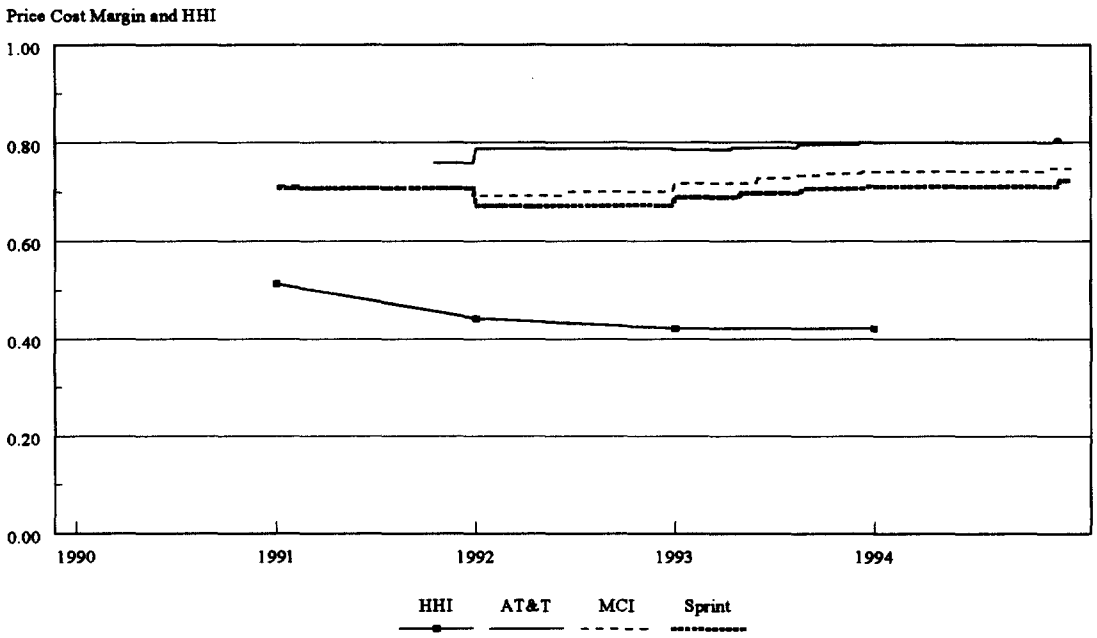


56. A comparison of carriers' marginal costs using net settlement payments versus gross settlement payments is shown in Figures Four and Five for calls from the United States to the United Kingdom. (Marginal costs based on both net settlement payments and gross settlement payments for the eight foreign country pairs are shown in Figures One to Sixteen of Appendix Five.) As can be observed, using net settlement payments results in lower marginal costs, which occurs because the former take into account carriers' estimated settlement receipts from foreign carriers.

C. The Relationship Between Price-Cost Margins and Concentration Over Time

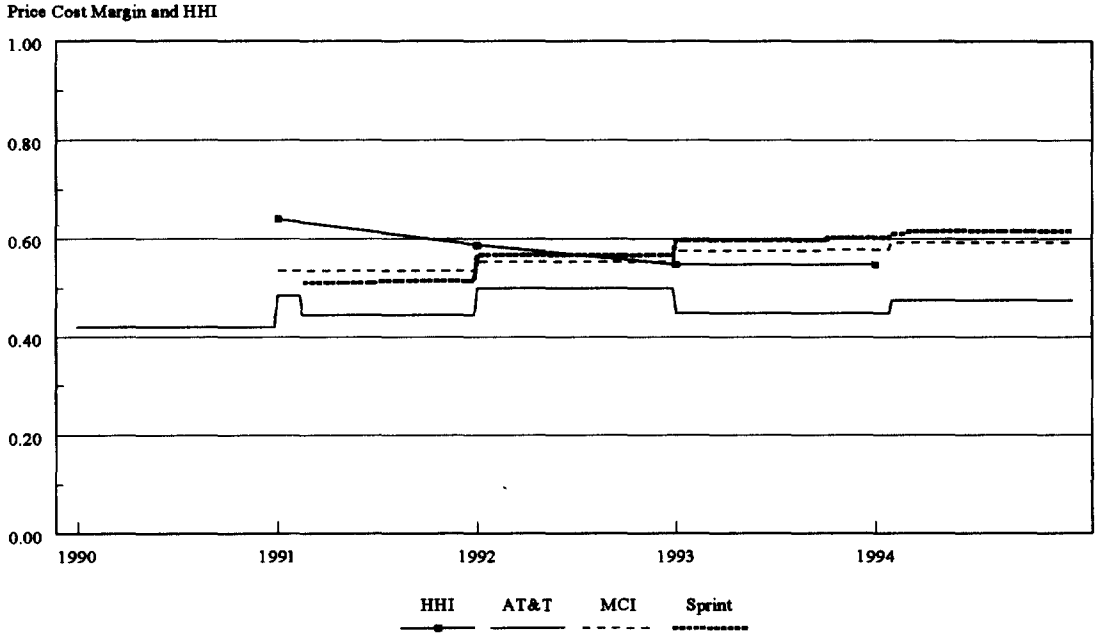
57. To complete the next step of my analysis, I calculate price-cost margins for standard IMTS, discount IMTS, and IWATS services as equal to price minus marginal cost, divided by price. Price-cost margins for standard IMTS services in outbound United States international markets are shown in Figures Six to Thirteen. Focusing first on the dynamic evidence, nearly all of the price-cost margin series increased over the period. The significance of this result for testing hypotheses of competition and collusion is discussed in the next section. With respect to static evidence, margins to most of the foreign countries were in excess of 0.70 by 1994, the exceptions being Mexico, Italy (for AT&T and Sprint), and the Dominican Republic. The significance of this result for testing hypotheses of the "toughness" of price competition is also discussed in the next section.

FIGURE SIX
PRICE-COST MARGINS AND MARKET CONCENTRATION
STANDARD IMTS CALLS FROM UNITED STATES TO CANADA
(40% STANDARD, 30% DISCOUNT, AND 30% ECONOMY)



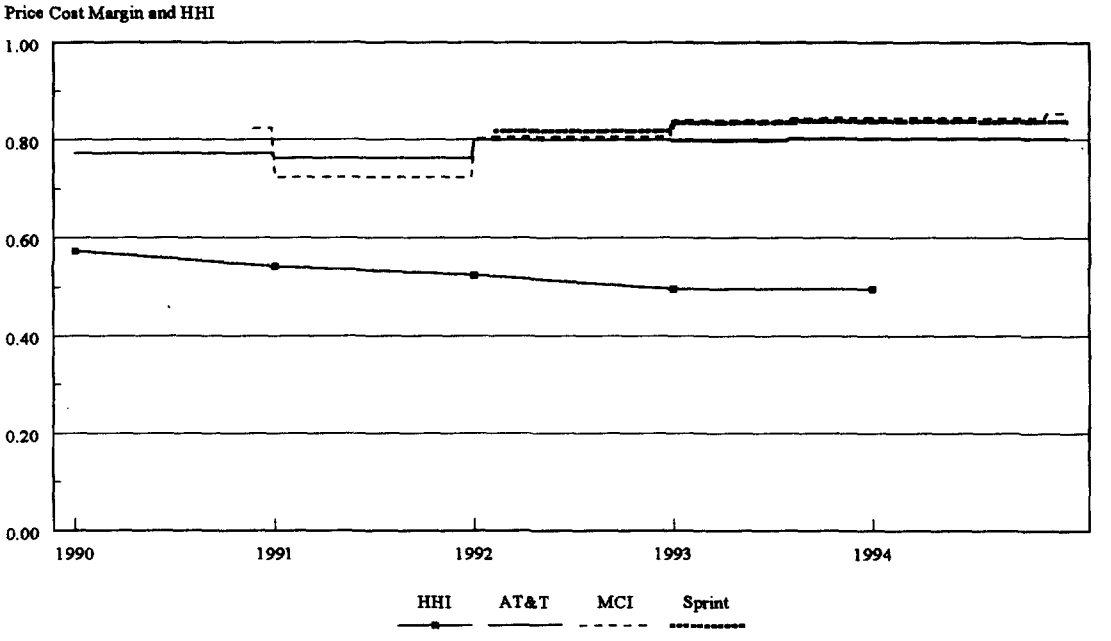
Marginal costs based on net settlement payments.

FIGURE SEVEN
PRICE-COST MARGINS AND MARKET CONCENTRATION
STANDARD IMTS CALLS FROM UNITED STATES TO MEXICO
(40% STANDARD, 30% DISCOUNT, AND 30% ECONOMY)



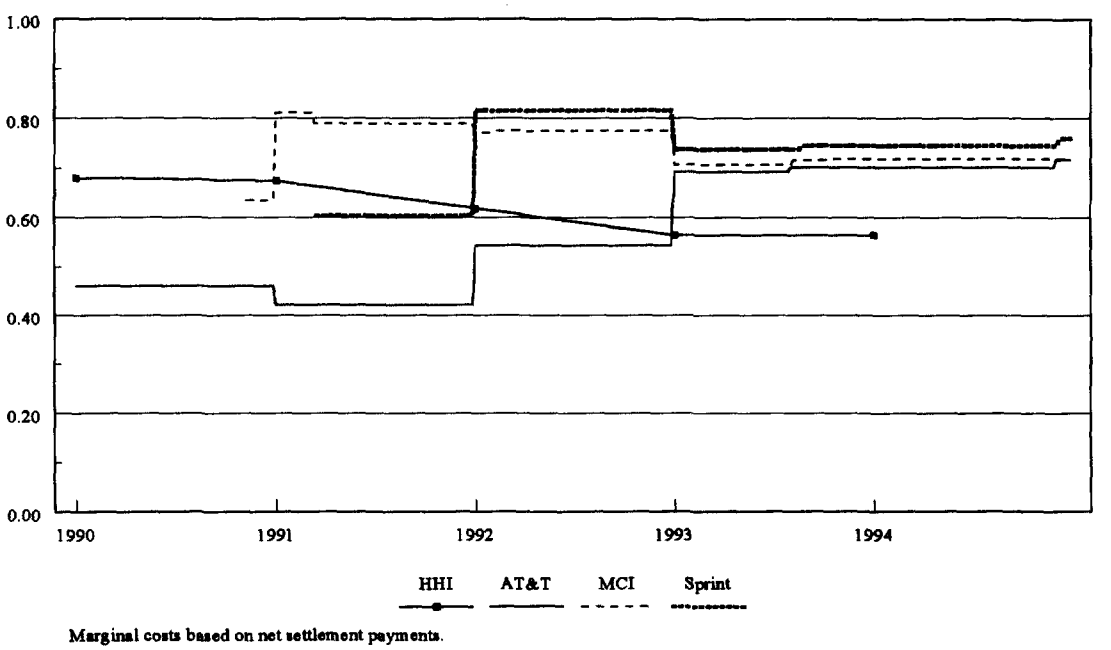
Marginal costs based on net settlement payments.

FIGURE EIGHT
PRICE-COST MARGINS AND MARKET CONCENTRATION
STANDARD IMTS CALLS FROM UNITED STATES TO UNITED KINGDOM
(30% STANDARD, 50% DISCOUNT, AND 20% ECONOMY)



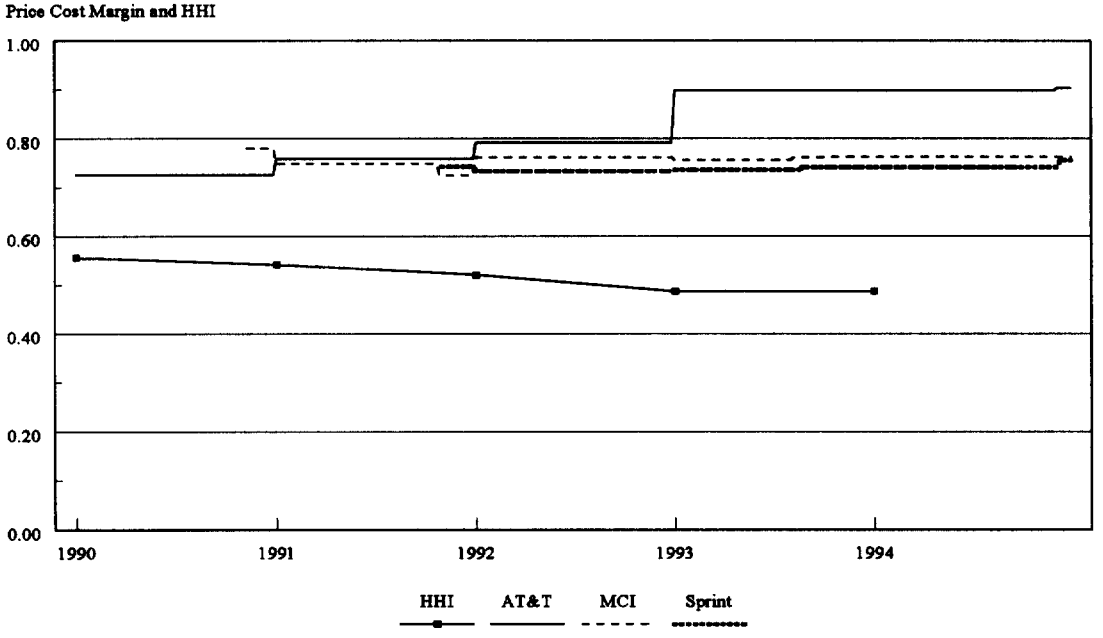
Marginal costs based on net settlement payments.

FIGURE NINE
PRICE-COST MARGINS AND MARKET CONCENTRATION
STANDARD IMTS CALLS FROM UNITED STATES TO GERMANY
(30% STANDARD, 50% DISCOUNT, AND 20% ECONOMY)



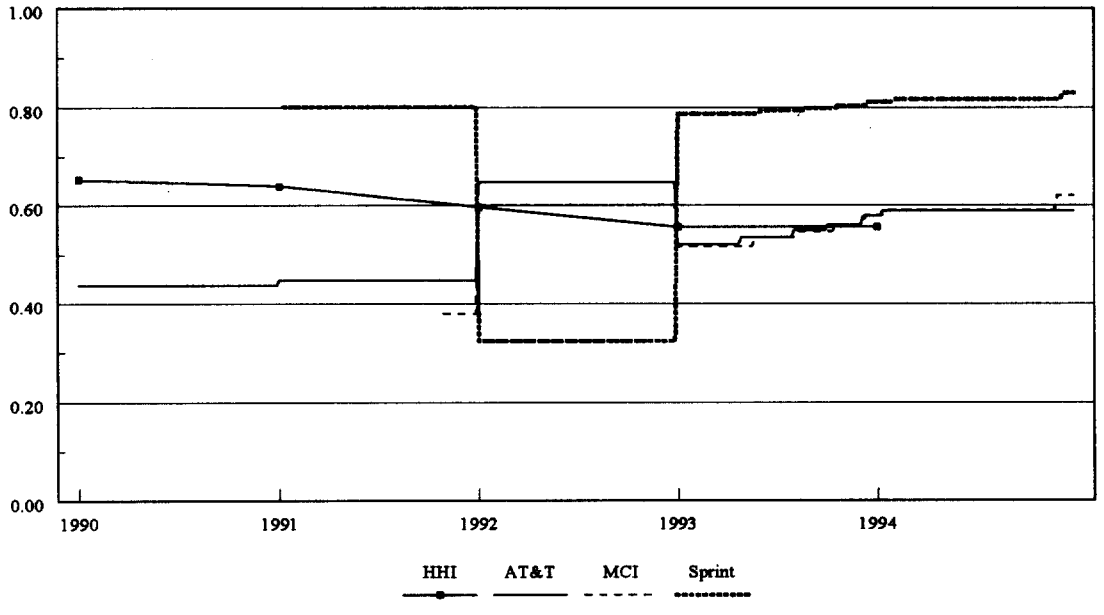
Marginal costs based on net settlement payments.

FIGURE TEN
PRICE-COST MARGINS AND MARKET CONCENTRATION
STANDARD IMTS CALLS FROM UNITED STATES TO FRANCE
(30% STANDARD, 50% DISCOUNT, AND 20% ECONOMY)



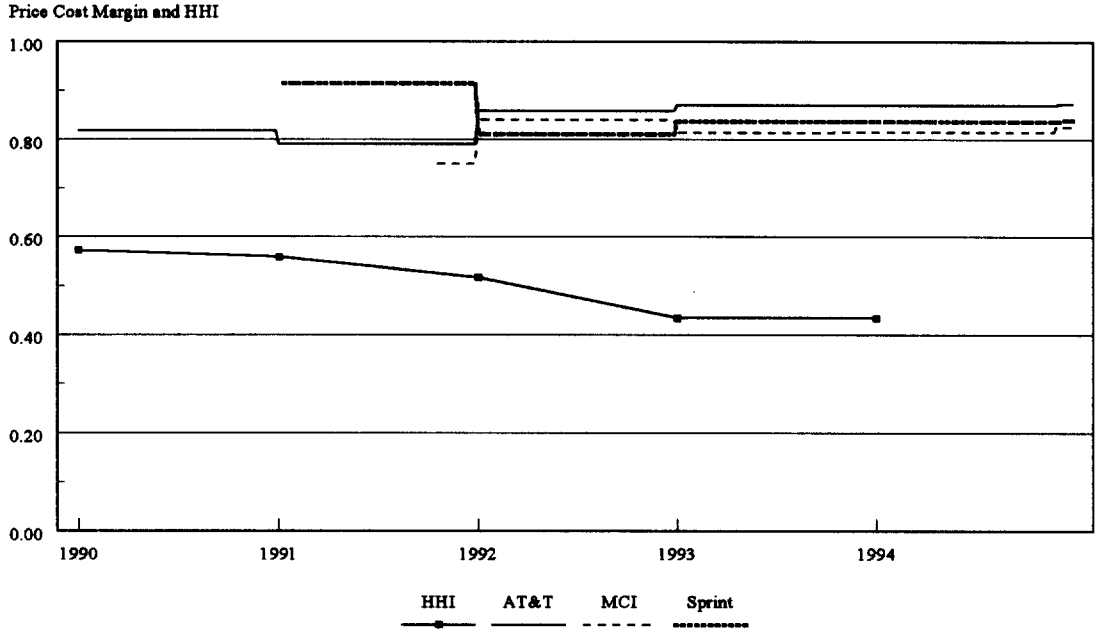
Marginal costs based on net settlement payments.

FIGURE ELEVEN
PRICE-COST MARGINS AND MARKET CONCENTRATION
STANDARD IMTS CALLS FROM UNITED STATES TO ITALY
(30% STANDARD, 50% DISCOUNT, AND 20% ECONOMY)



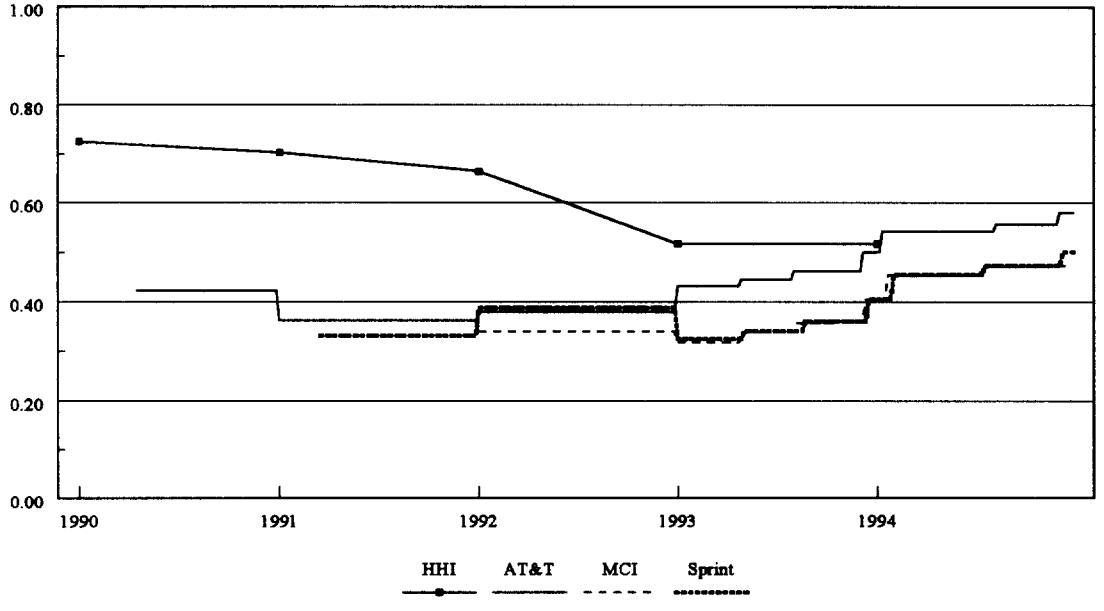
Marginal costs based on net settlement payments.

FIGURE TWELVE
PRICE-COST MARGINS AND MARKET CONCENTRATION
STANDARD IMTS CALLS FROM UNITED STATES TO JAPAN
(30% STANDARD, 50% DISCOUNT, AND 20% ECONOMY)



Marginal costs based on net settlement payments.

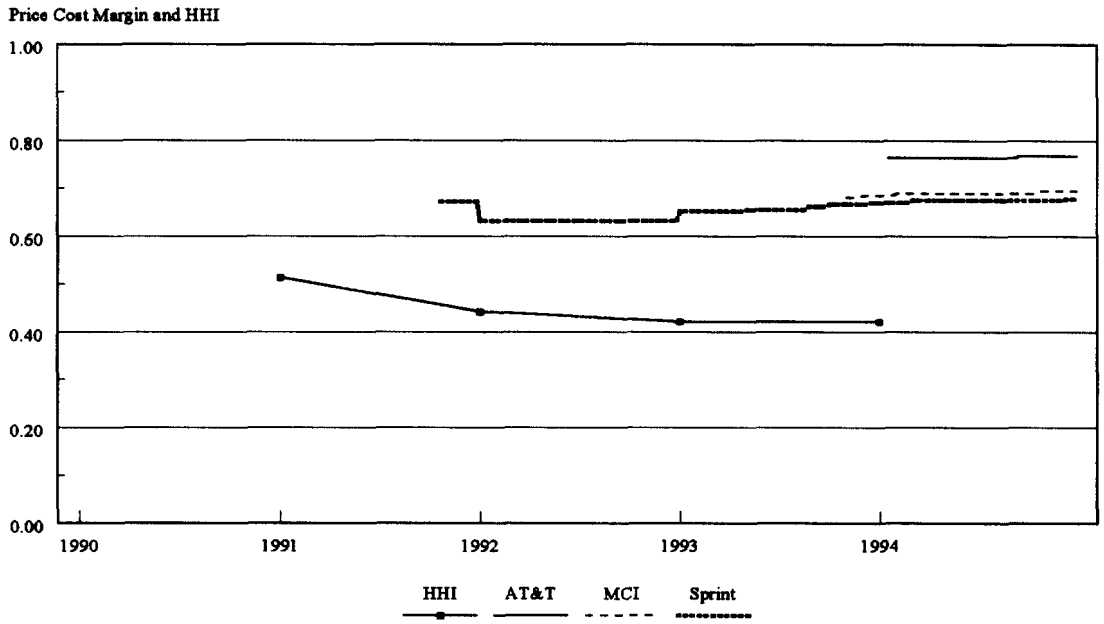
FIGURE THIRTEEN
PRICE-COST MARGINS AND MARKET CONCENTRATION
STANDARD IMTS CALLS FROM UNITED STATES TO DOMINICAN REPUBLIC
(40% STANDARD, 30% DISCOUNT, AND 30% ECONOMY)



Marginal costs based on net settlement payments.

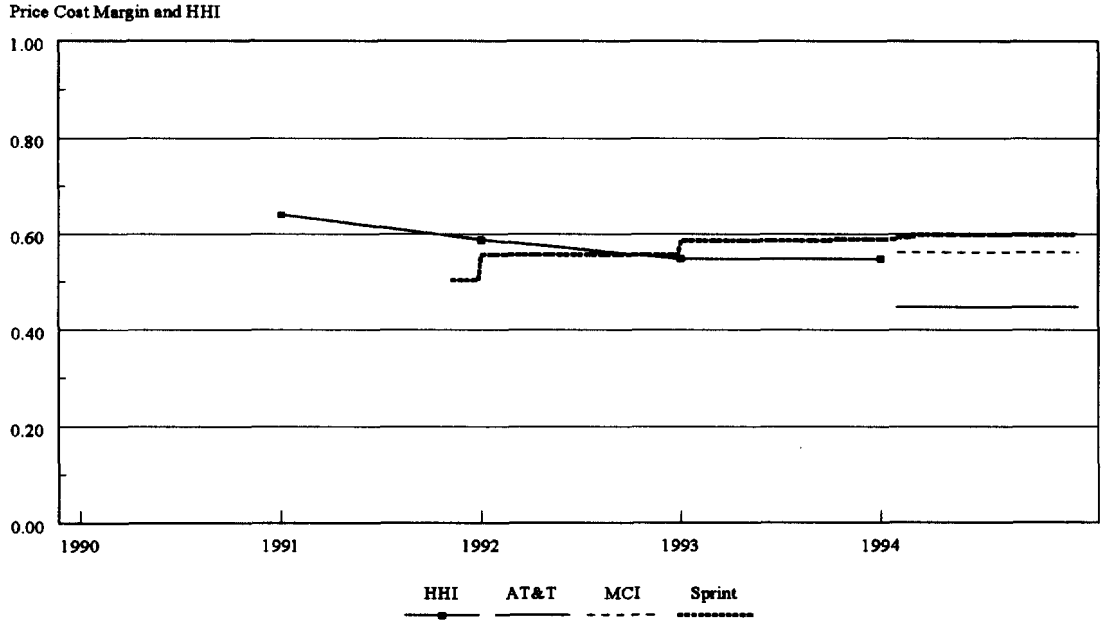
58. Price-cost margins for discount IMTS services in outbound United States international markets are shown in Figures Fourteen to Twenty-One. Margins were generally increasing over the period. As previously discussed, the margins parallel those for standard IMTS because discount IMTS prices are specified as percentage discounts off standard IMTS prices, and both discount and standard IMTS services have the same marginal costs. Because of the discounts, price-cost margins for discount IMTS were somewhat lower than for standard IMTS, as indicated by Table Eight which shows that 1994 price-cost margins for discount IMTS ranged from 79 percent to 96 percent of margins for standard IMTS services. The presence of discount plans did not, therefore, lead to large declines in carriers' price-cost margins indicative of vigorous price competition.

FIGURE FOURTEEN
PRICE-COST MARGINS AND MARKET CONCENTRATION
DISCOUNT IMTS CALLS FROM UNITED STATES TO CANADA
(40% STANDARD, 30% DISCOUNT, AND 30% ECONOMY)



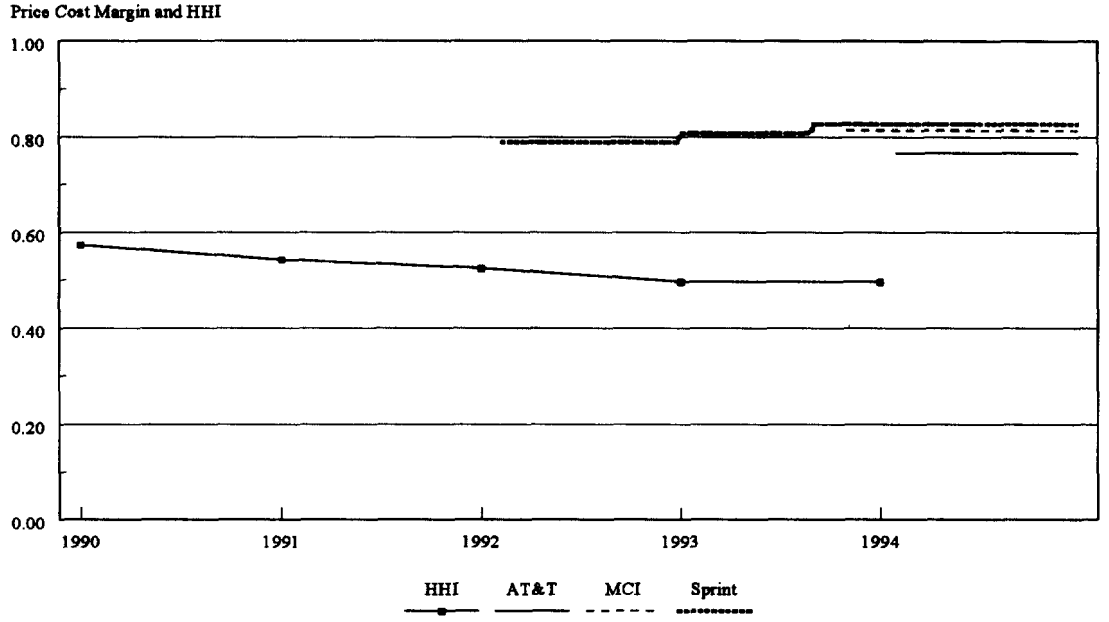
Marginal costs based on net settlement payments.
Prices based on 50 minutes per month.

FIGURE FIFTEEN
PRICE-COST MARGINS AND MARKET CONCENTRATION
DISCOUNT IMTS CALLS FROM UNITED STATES TO MEXICO
(40% STANDARD, 30% DISCOUNT, AND 30% ECONOMY)



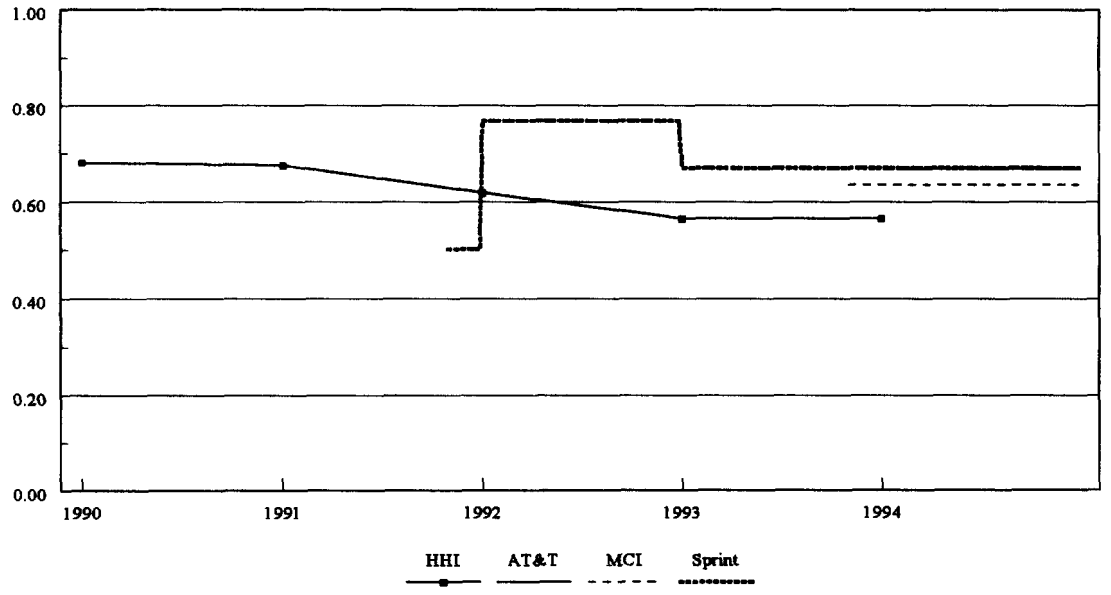
Marginal costs based on net settlement payments.
Prices based on 50 minutes per month.

FIGURE SIXTEEN
PRICE-COST MARGINS AND MARKET CONCENTRATION
DISCOUNT IMTS CALLS FROM UNITED STATES TO UNITED KINGDOM
(30% STANDARD, 50% DISCOUNT, AND 20% ECONOMY)



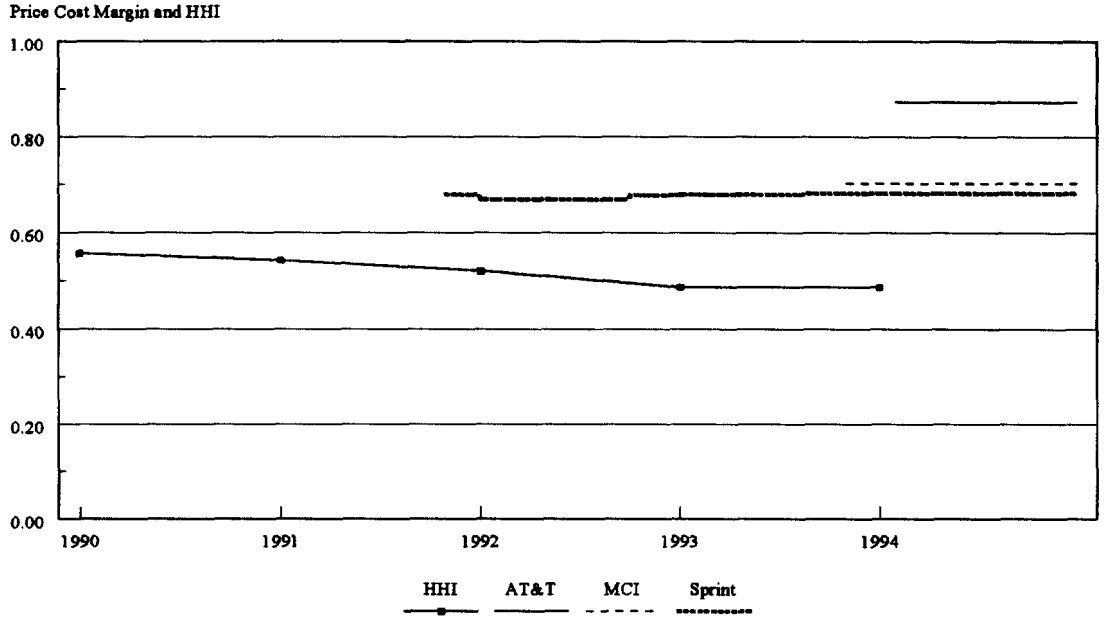
Marginal costs based on net settlement payments.
Prices based on 50 minutes per month.

FIGURE SEVENTEEN
PRICE-COST MARGINS AND MARKET CONCENTRATION
DISCOUNT IMTS CALLS FROM UNITED STATES TO GERMANY
(30% STANDARD, 50% DISCOUNT, AND 20% ECONOMY)



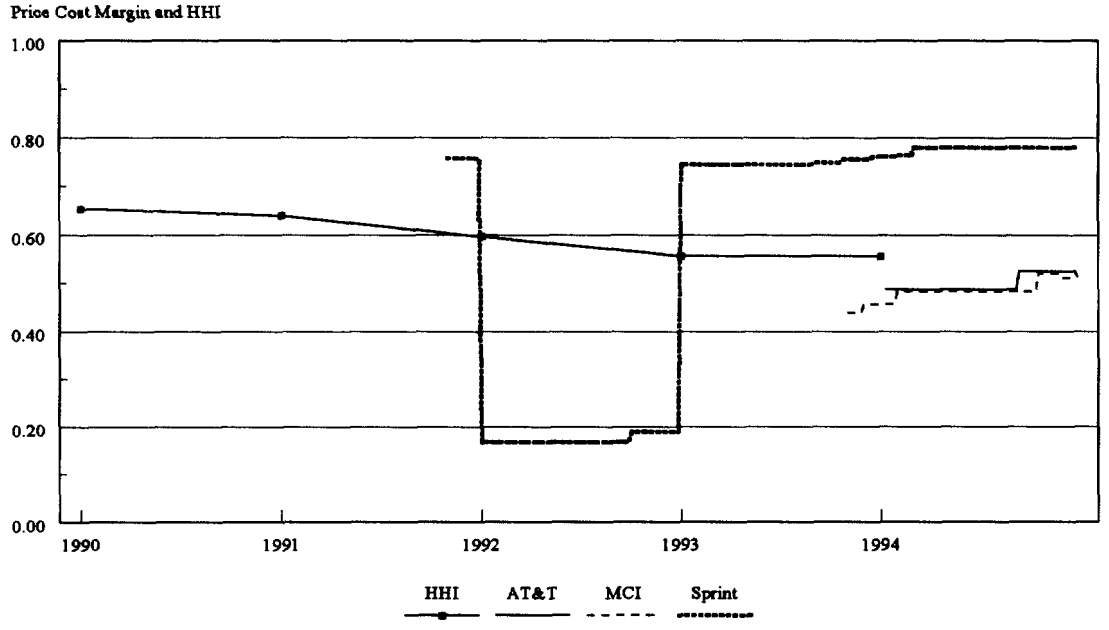
Marginal costs based on net settlement payments.
Prices based on 50 minutes per month.

FIGURE EIGHTEEN
PRICE-COST MARGINS AND MARKET CONCENTRATION
DISCOUNT IMTS CALLS FROM UNITED STATES TO FRANCE
(30% STANDARD, 50% DISCOUNT, AND 20% ECONOMY)



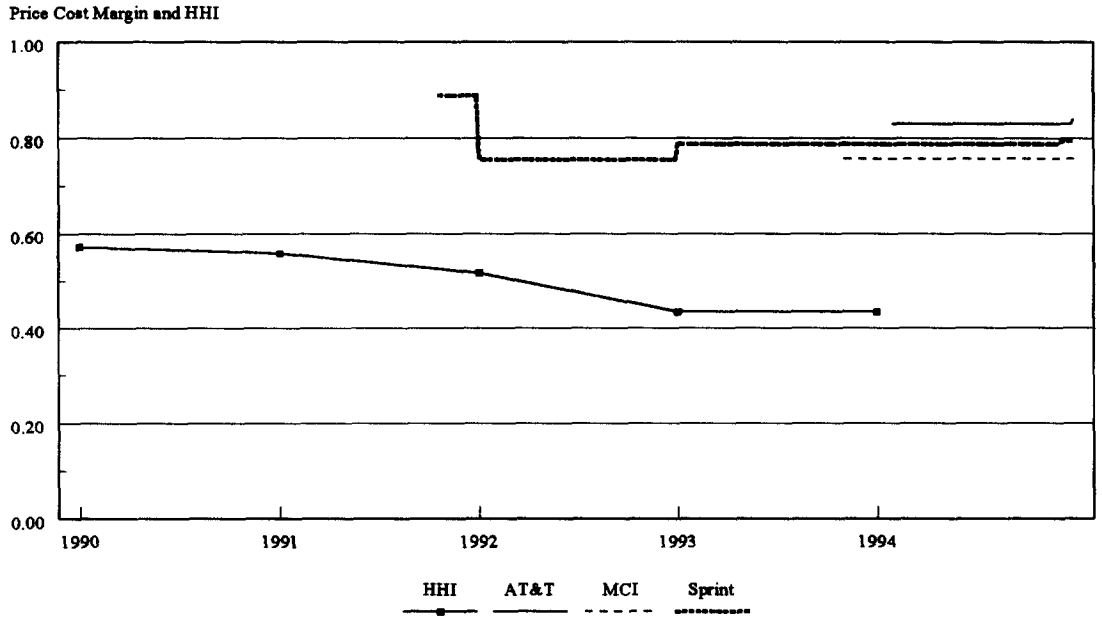
Marginal costs based on net settlement payments.
Prices based on 50 minutes per month.

FIGURE NINETEEN
PRICE-COST MARGINS AND MARKET CONCENTRATION
DISCOUNT IMTS CALLS FROM UNITED STATES TO ITALY
(30% STANDARD, 50% DISCOUNT, AND 20% ECONOMY)



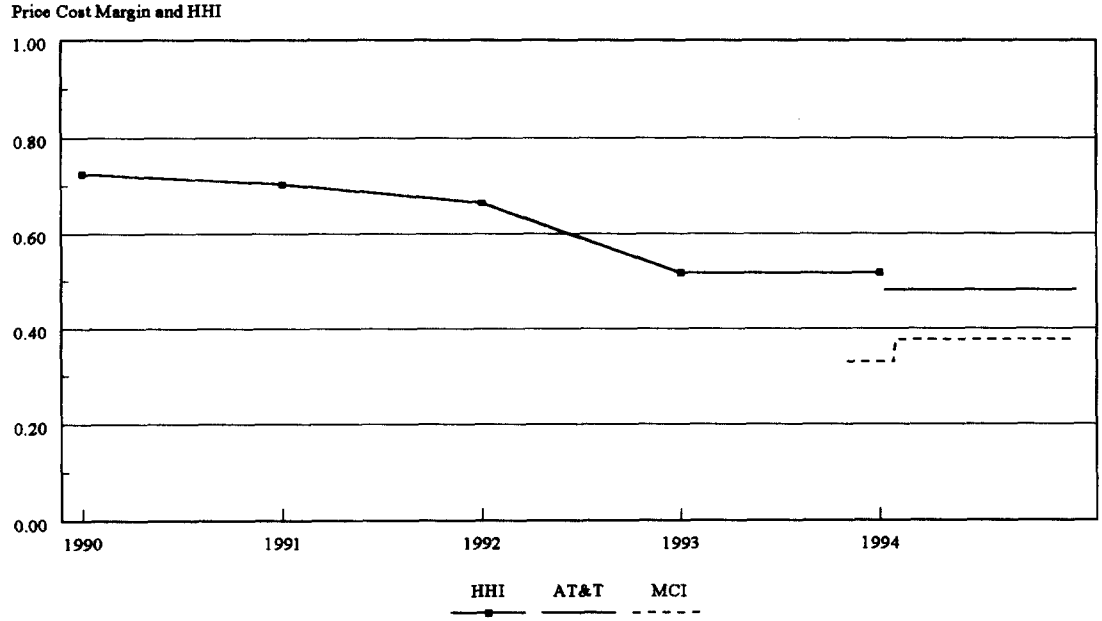
Marginal costs based on net settlement payments.
Prices based on 50 minutes per month.

FIGURE TWENTY
PRICE-COST MARGINS AND MARKET CONCENTRATION
DISCOUNT IMTS CALLS FROM UNITED STATES TO JAPAN
(30% STANDARD, 50% DISCOUNT, AND 20% ECONOMY)



Marginal costs based on net settlement payments.
Prices based on 50 minutes per month.

FIGURE TWENTY-ONE
PRICE-COST MARGINS AND MARKET CONCENTRATION
DISCOUNT IMTS CALLS FROM UNITED STATES TO DOMINICAN REPUBLIC
(40% STANDARD, 30% DISCOUNT, AND 30% ECONOMY)



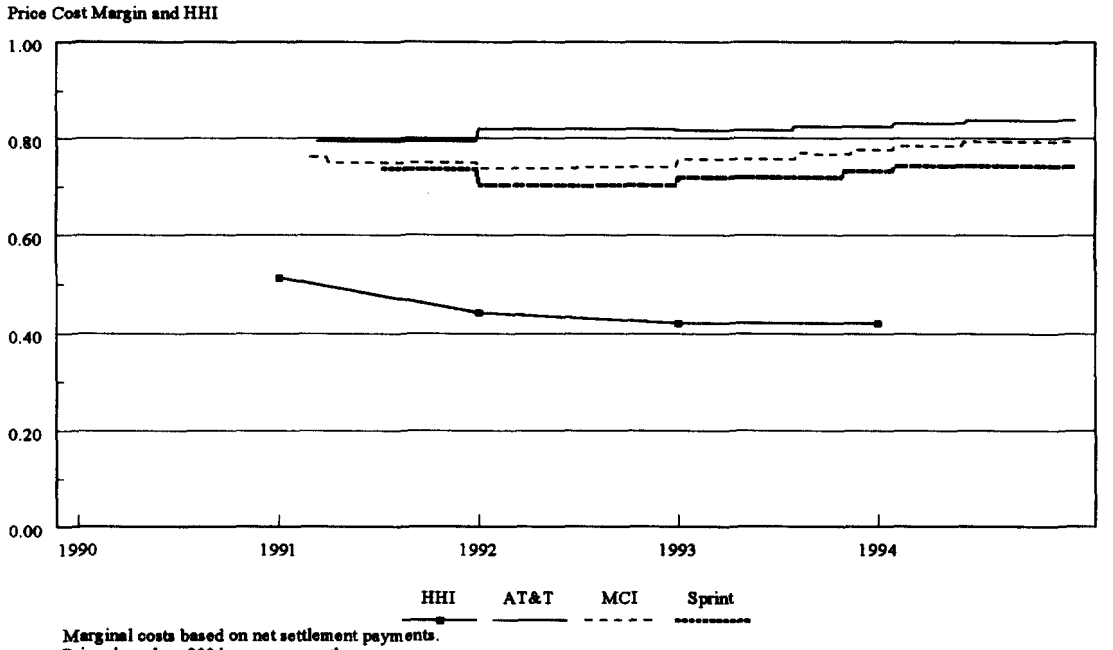
Marginal costs based on net settlement payments.
Prices based on 50 minutes per month.

TABLE EIGHT
DISCOUNT IMTS PRICE-COST MARGINS AS A PERCENTAGE OF
STANDARD IMTS PRICE-COST MARGINS
(1994)

Country	AT&T	MCI	Sprint
Canada	96%	92%	94%
Mexico	94%	95%	97%
United Kingdom	96%	96%	99%
Germany	95%	88%	90%
France	97%	92%	92%
Italy	83%	79%	94%
Japan	95%	93%	94%
Dominican Republic	89%	81%	n/a

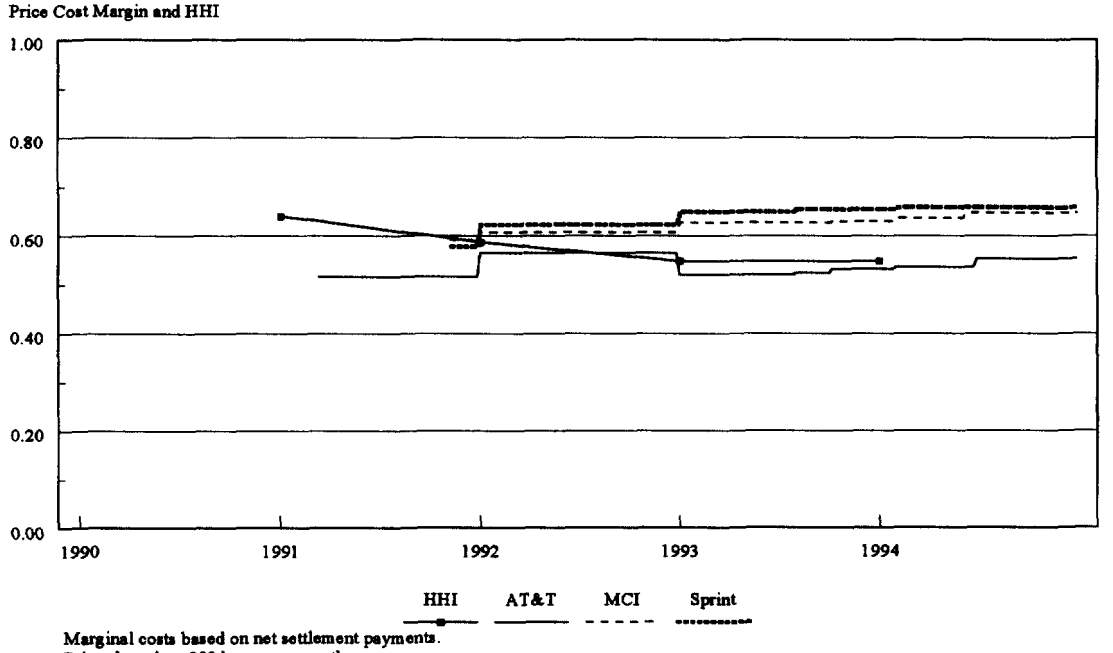
59. Price-cost margins for outbound United States IWATS services are shown in Figures Twenty-Two to Twenty-Nine. Essentially all the margins increased from 1991 to 1994, despite the declines in market concentration. Margins in most of the international markets exceeded of 0.70 by 1994, while margins for Mexico and Italy (for AT&T and Sprint) were approximately 0.60, and margins for the Dominican Republic were approximately 0.50. Since margins for outbound United States IWATS calls were at the same levels as margins for standard IMTS calls, the data offer no evidence that markets for outbound IWATS services were any more competitive than were markets for standard IMTS services.

FIGURE TWENTY-TWO
PRICE-COST MARGINS AND MARKET CONCENTRATION
IWATS CALLS FROM UNITED STATES TO CANADA
(85% STANDARD, 10% DISCOUNT, AND 5% ECONOMY)



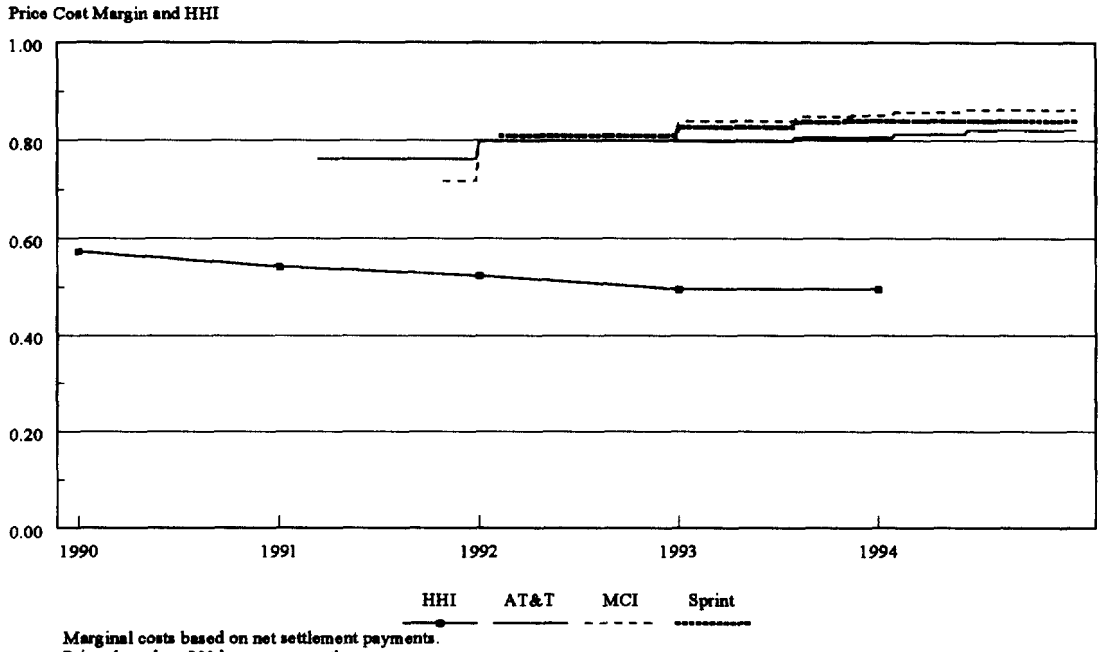
Marginal costs based on net settlement payments.
Prices based on 200 hours per month.

FIGURE TWENTY-THREE
PRICE-COST MARGINS AND MARKET CONCENTRATION
IWATS CALLS FROM UNITED STATES TO MEXICO
(85% STANDARD, 10% DISCOUNT, AND 5% ECONOMY)



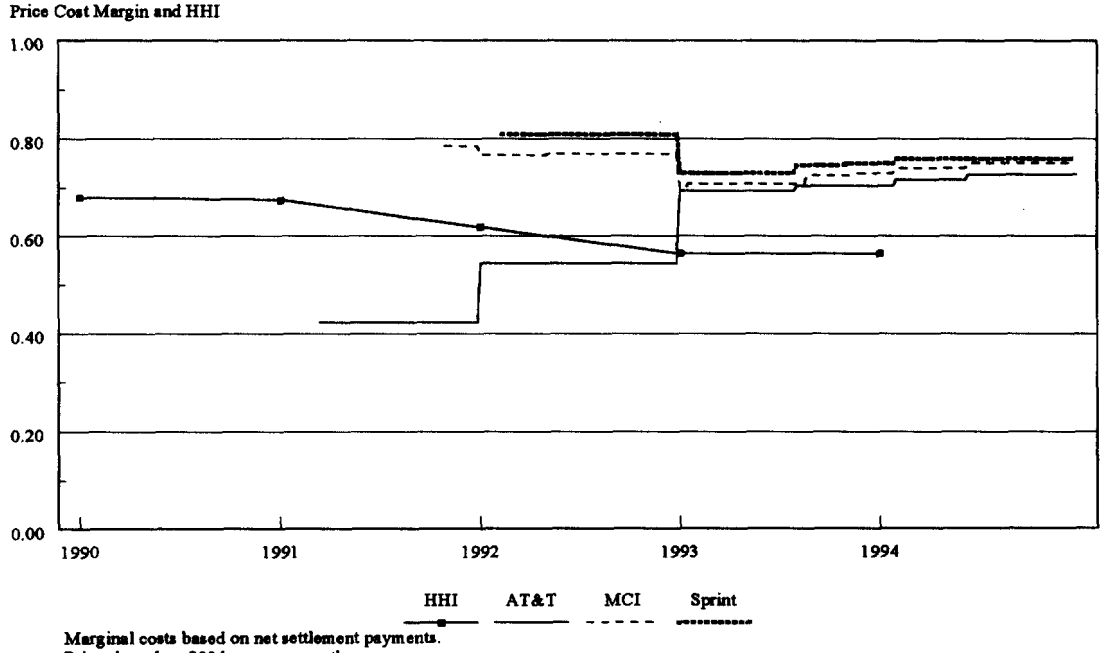
Marginal costs based on net settlement payments.
Prices based on 200 hours per month.

FIGURE TWENTY-FOUR
PRICE-COST MARGINS AND MARKET CONCENTRATION
IWATS CALLS FROM UNITED STATES TO UNITED KINGDOM
(60% STANDARD, 20% DISCOUNT, AND 20% ECONOMY)



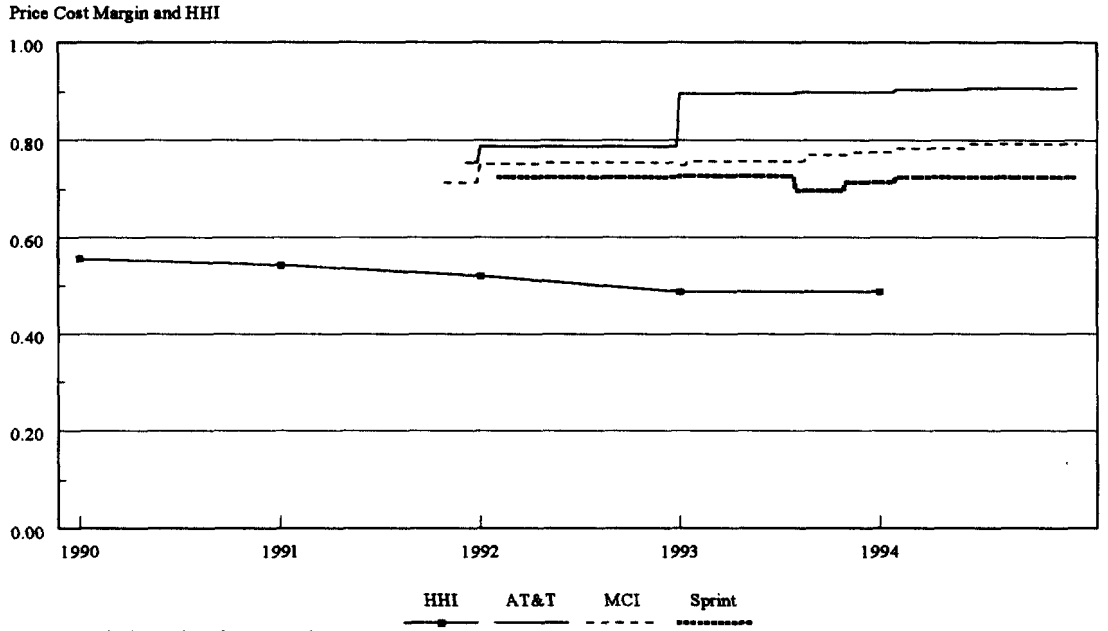
Marginal costs based on net settlement payments.
Prices based on 200 hours per month.

FIGURE TWENTY-FIVE
PRICE-COST MARGINS AND MARKET CONCENTRATION
IWATS CALLS FROM UNITED STATES TO GERMANY
(60% STANDARD, 20% DISCOUNT, AND 20% ECONOMY)



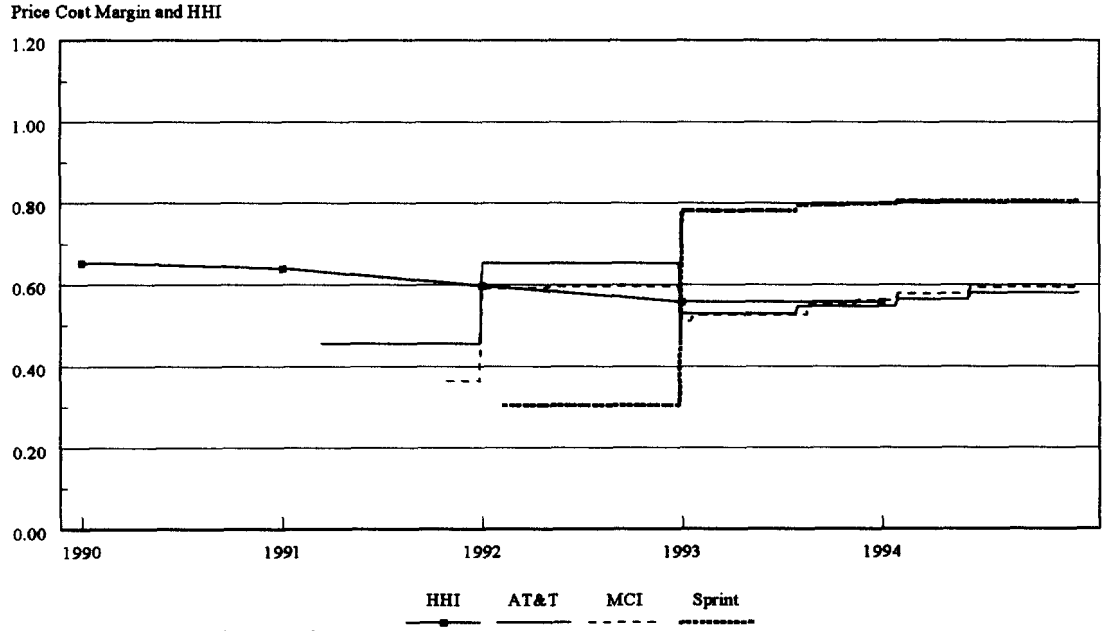
Marginal costs based on net settlement payments.
Prices based on 200 hours per month.

FIGURE TWENTY-SIX
PRICE-COST MARGINS AND MARKET CONCENTRATION
IWATS CALLS FROM UNITED STATES TO FRANCE
(60% STANDARD, 20% DISCOUNT, AND 20% ECONOMY)



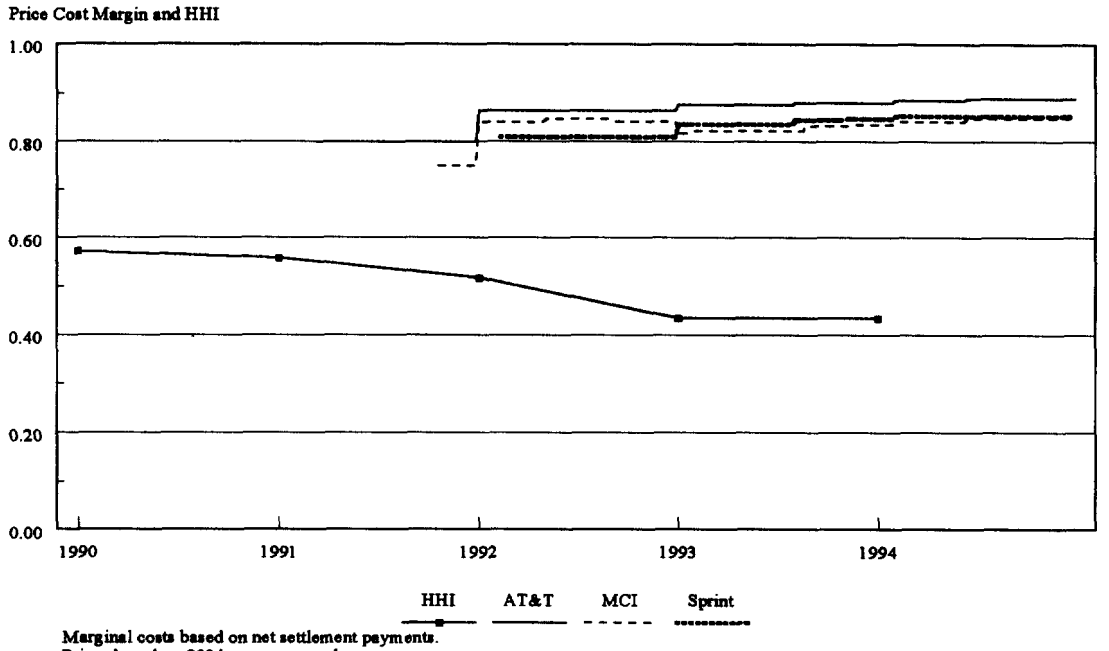
Marginal costs based on net settlement payments.
Prices based on 200 hours per month.

FIGURE TWENTY-SEVEN
PRICE-COST MARGINS AND MARKET CONCENTRATION
IWATS CALLS FROM UNITED STATES TO ITALY
(60% STANDARD, 20% DISCOUNT, AND 20% ECONOMY)



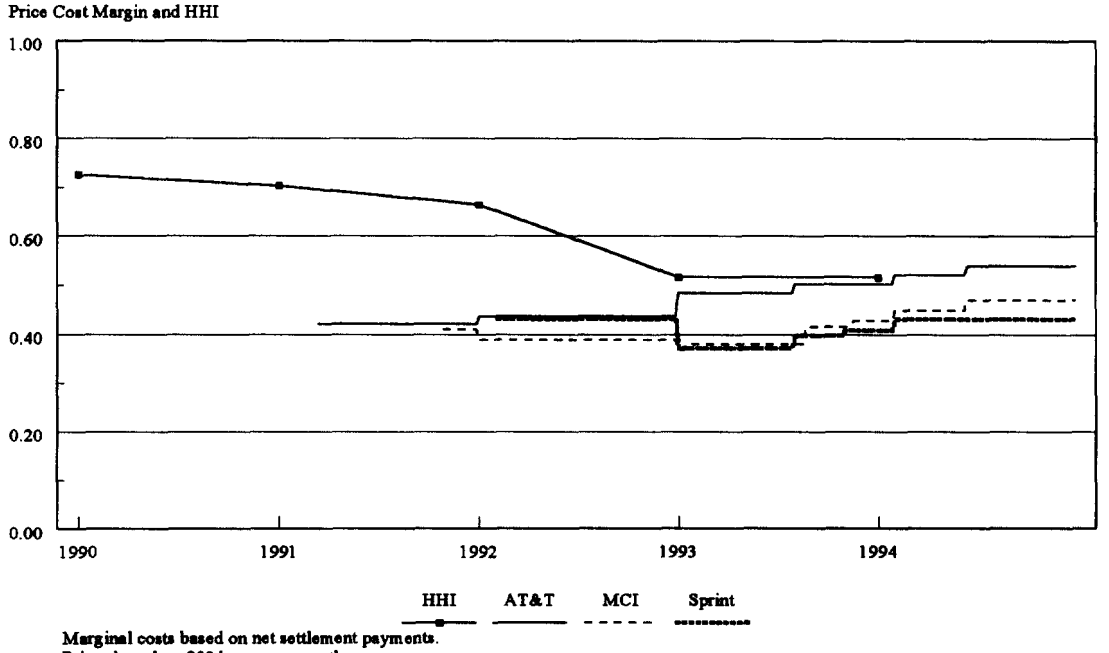
Marginal costs based on net settlement payments.
Prices based on 200 hours per month.

FIGURE TWENTY-EIGHT
PRICE-COST MARGINS AND MARKET CONCENTRATION
IWATS CALLS FROM UNITED STATES TO JAPAN
(75% STANDARD, 25% DISCOUNT, AND 0% ECONOMY)



Marginal costs based on net settlement payments.
Prices based on 200 hours per month.

FIGURE TWENTY-NINE
PRICE-COST MARGINS AND MARKET CONCENTRATION
IWATS CALLS FROM UNITED STATES TO DOMINICAN REPUBLIC
(85% STANDARD, 10% DISCOUNT, AND 5% ECONOMY)



Marginal costs based on net settlement payments.
Prices based on 200 hours per month.

D. Interpreting the Dynamic and Static Evidence on Price-Cost Margins and Market Concentration

60. The final step in my analysis is to use the dynamic and static market data on price-cost margins and HHIs to test alternative hypotheses of firms' price-setting behavior. Beginning with the dynamic market data, the evidence rejects non-cooperative models of firm behavior, such as Cournot, as well as the competitive, Bertrand hypothesis. The Cournot hypothesis regarding market dynamics was that declines in HHI over time would cause declines in price-cost margins. The evidence firmly rejects this hypothesis, as essentially all margins in individual country-pair markets increased despite declines in HHI. The Bertrand hypothesis was that price-cost margins should remain constant at zero as long as at least two firms competed in a market. This hypothesis is rejected by data on market dynamics as margins exceeded zero throughout the 1990-1994 period. Also, in five of the country-pair markets (Germany, Japan, France, Dominican Republic, and Italy) the HHI fell from one in 1985 to values of 0.43 to 0.56 by 1993 (see Table Two). However, price-cost margins did not decline towards the competitive level, so the Bertrand hypothesis cannot be correct in these country-pair markets.

61. The only hypothesis regarding the "toughness" of firm price-setting relationships supported by the dynamic behavior of increasing or stable price-cost margins and decreasing HHIs is that of tacit collusion. Recall that according to the theory of tacit collusion, changes in HHI have no direct association with changes in price-cost margins. A decline in HHI could be coincident with an increase in the extent to which firms set prices in a collusive manner, resulting in increasing margins despite decreasing market concentration. The evidence on market dynamics rejects the Cournot and Bertrand hypotheses, but supports the predictions of the tacit collusion hypothesis. Accordingly, the evidence is that the three leading carriers set their prices as if in tacit collusion in these markets for outbound international telecommunications services.

62. Turning to the static market data, the evidence again rejects the Cournot and Bertrand hypotheses. The Cournot hypothesis regarding different markets at the same point in time was that markets with lower HHIs would have lower price-cost margins. But as shown in the table below, this is not the case. For example, the HHI in Mexico exceeded that in Canada, but price-cost margins in Mexico were lower in 1994 than in Canada. Finally, the Bertrand hypothesis was that price-cost margins at any date should be zero across markets (as long as at least two firms competed in each market). This hypothesis is also rejected since, at each date in the sample periods covered by the available data, margins exceeded zero.

TABLE NINE
HHIS AND STANDARD IMTS PRICE-COST MARGINS
(1994)

Country	HHI	Price-Cost Margins		
		AT&T	MCI	Sprint
Canada	0.42	0.80	0.74	0.71
Mexico	0.55	0.45	0.58	0.60
United Kingdom	0.50	0.80	0.84	0.84
Germany	0.56	0.70	0.72	0.75
Japan	0.43	0.87	0.82	0.84
France	0.49	0.90	0.76	0.74
Dominican Republic	0.52	0.50	0.40	0.41
Italy	0.56	0.58	0.58	0.81